

CLAIMS

1. A method for sports training and testing of at least one athlete, said method including the steps of:
 - 5 initiating within a control unit a predetermined protocol for training and testing, which protocol comprises layout information for locations of a plurality of remote units and at least one sensor, and route or game plan information for said at least one athlete relative to the plurality of remote units;
 - 10 instructing said plurality of remote units to produce a series of stimuli for said at least one athlete in accordance with the route or game plan information;
 - 15 receiving feedback information from said at least one sensor, said feedback information associated with said at least one athlete's response to the stimuli;
 - transmitting the feedback information to said control unit; and
 - automatically modifying further stimuli of the series of stimuli having regard to the route or game plan information and the response.
2. The sports training and testing method according to claim 1 wherein the route or game plan includes one or more pre-programmed or user defined stimuli activation patterns for physical activities required of said at least one athlete.
- 20 3. The sports training and testing method according to either claim 1 or claim 2 wherein the protocol further includes information about sequencing of the series of stimuli and desired actions in response required of said at least one athlete.
- 25 4. The sports training and testing method of either claim 2 or claim 3 wherein said protocol is a reactive sprinting and agility protocol and the method further includes the steps of:
 - measuring said at least one athletes reaction time upon starting the protocol;
 - and
- 30 measuring said at least one athletes sprint times over a random course defined by said activation patterns.

5. The sports training and testing method of either claim 2 or claim 3 wherein said protocol is a reactive offensive/defensive training protocol wherein said at least one athlete includes players and the method further includes the steps of:
 - 5 instructing at least one offensive player through a plurality of defensive players over a random course defined by said activation patterns, wherein the plurality of defensive players are required to react to said at least one offensive player's movements without knowledge of the random course.
10. The sports training and testing method of either claim 2 or claim 3 wherein said protocol is a group reactive training protocol wherein said at least one athlete includes a group of players that are subjected to stimuli to complete a series tactical patterns or combinations of play over a random course defined by said activation patterns.
15. 7. The sports training and testing method of claim 6 wherein said group reactive training protocol further includes the step of:
 - 20 instructing a first player from said group of players to move to a randomly selected remote unit thereby prompting remaining players within the group to initiate the most appropriate tactical move or pattern of play in response to the instructed movement.
25. 8. The sports training and testing method of either claim 2 or claim 3 wherein said protocol is a grid training protocol and the method further includes the steps of:
 - 25 placing an array of remote units in a grid type configuration;
 - 25 directing small group(s) of athletes simultaneously or separately by stimuli specific to respective athletes through a course indicated by said remote units wherein the course is a random course defined by said activation patterns
30. 9. The sports training and testing method as defined in any one of claims 1 to 8 wherein the feedback information is forwarded to one of said plurality of remote units before forwarding said information to the control unit.

10. A sports training and testing apparatus for at least one athlete, said apparatus including:

5 a control unit adapted to implement a predetermined protocol, wherein the protocol comprises layout information for remote units and sensors and route or game plan information for said at least one athlete;

10 a plurality of remote units disposed in accordance with the layout information for providing a series of stimuli for said at least one athlete in accordance with the route or game plan information;

15 at least one sensor disposed in accordance with the layout information for providing feedback information associated with said at least one athlete's response to the stimuli to said control unit; and

20 a communications network providing communications between the control unit and the plurality of remote units including said at least one sensor, wherein further stimuli in said series of stimuli are automatically modified having regard to the route or game plan information and the response.

11. The sports training and testing apparatus as defined in claim 10 wherein the control unit is either a computer, a portable computer, a personal digital assistant (PDA), palm top, mobile telephone or other such portable processing device.

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12. The sports training and testing apparatus as defined in either claim 10 or claim 11 wherein the remote units receive instructions for producing the stimuli for said at least one athlete in accordance with the protocol from said control unit via the communications network.

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13. The sports training and testing apparatus as defined in any one of claims 10 to 12 wherein the remote units include means for identifying said at least one athlete.

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14. The sports training and testing apparatus as defined in any one of claims 10 to 13 wherein the remote units are adapted to provide stimuli including any one or more of audio stimuli, visual stimuli, tactile stimuli or a combination thereof.

15. The sports training and testing apparatus as defined in any one of claims 10 to 14 wherein means for producing the stimuli are mounted on said remote units.

16. The sports training and testing apparatus as defined in any one of claims 10 to 14 wherein means for producing the stimuli are mounted separately of said remote units.

17. The sports training and testing apparatus as defined in any one of claims 10 to 16 wherein the remote units further include a data capture sub-unit having a memory.

18. The sports training and testing apparatus as defined in claim 17 wherein the data capture sub-unit is adapted to receive said feedback information from the sensors before forwarding the information to said control unit.

19. The sports training and testing apparatus as defined in any one of claims 10 to 18 wherein said at least one sensor is a biometric sensor.

20. The sports training and testing apparatus as defined in any one of claims 10 to 19 wherein said at least one sensor is selected from the group including a timer, a pressure sensor, a pedometer and an accelerometer.

21. The sports training and testing apparatus as defined in any one of claims 10 to 20 wherein said at least one sensor is integral with or coupled to one of said plurality of remote units.

22. The sports training and testing apparatus as defined in of any one of claims 10 to 21 wherein at least one sensor is worn by said at least one athlete.

23. A sports training and testing system for at least one athlete, said system including:
an on-field network having the sports training and testing apparatus of any one of claims 10 to 22; and

a communications link coupling the on-field network to an off-field network, the off-field network having:

- a terminal for receiving from said control unit via the communications link data containing the feedback information for post processing; and
- a memory for storing the post processed data.

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24. The sports training and testing system according to claim 23 wherein the communication link includes a wireless link.

10 25. The sports training and testing system according to claim 23 wherein the communication link includes a wired connection.

15 26. The sports training and testing system according to any one of claims 23 to 25 wherein the remote terminal is a workstation running software means for processing the data containing feedback information.

27. The sports training and testing system according to claim 26 wherein the remote terminal includes an Internet connection.

20 28. The sports training and testing system according to either claim 26 or claim 27 further including a protocol development suite for developing or modifying protocols for specific training needs of different athletes.

25 29. The sports training and testing system according to any one of claims 23 to 28 wherein the processed data is stored in a database to enable later retrieval and analysis by a trainer or coach.

30 30. The sports training and testing system according to any one of claims 23 to 29 wherein a trainer receives intermediate reports regarding said at least one athlete's responses compared with the responses required by the predetermined protocol.

31. The sports training and testing system according to 30 wherein the trainer modifies the protocol in real time based on said intermediate reports.

32. A sports training and testing method for a user, said method including the 5 steps of:

initiating within a control unit a predetermined protocol for training and testing the user;

instructing a plurality of remote units to produce a series of stimuli to the athlete in response to the predetermined protocol;

10 receiving feedback information from at least one sensor, which feedback information is associated with the user's response to the stimuli;

automatically modifying further stimuli of the series of stimuli having regard to the feedback information;

15 transmitting the feedback information across a communications link to a remote terminal;

processing the received information within the remote terminal; and

storing the processed information in a memory.

33. A sports training and testing system for a user, said system including:

20 an on-field network having:

- a control unit adapted to implement a predetermined protocol for training and/or testing the user;

- a plurality of remote units for providing a series of stimuli to said user in accordance with the predetermined protocol;

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- at least one sensor for providing feedback information associated with said user's response to the stimuli to said control unit, wherein further stimuli in the series of stimuli may be automatically modified having regard to the feedback information; and

a communications link coupling the on-field network to an off-field network,

30 the off-field network having:

- a terminal for receiving from said control unit via the communications link the feedback information for post processing; and

- a memory for storing the post processed data.

34. A competitive sporting activity said activity, including:

a playing area, said area being defined by a plurality of remote units, said

5 remote units providing a set of stimuli;

a plurality of athletes wherein each of the plurality of athletes is assigned the role of either a defensive player or an offensive player;

a game object for propulsion by the offensive players;

randomly generating a stimuli at a selected remote unit within the playing

10 area assigned to the offensive players, to which the offensive players must move the game object;

said defensive players then being required to react to movements of said offensive player(s) in order to prevent said game object reaching the selected remote unit.

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35. The sporting activity of claim 34 wherein the game object is a projectile.

36. The sporting activity of claim 34 or 35 wherein the activity is conducted over one or more periods of a predefined length.

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37. The sporting activity of claim 36 wherein the length of the one or more periods is a predefined time.

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38. The sporting activity of claim 36 wherein the length of said one or more periods is based on a set number of completions required to be performed by said offensive players.

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39. The sporting activity of any one of claims 34 to 38 wherein the activity is selected from the group including full-contact, partial-contact and non-contact activities.

40. The sporting activity of any one of claims 34 to 39 wherein a penalty is imposed on the offensive players in response to said defensive players interfering with the propulsion of the game object to the selected remote unit.

5 41. The sporting activity of claim 40 where the penalty imposed is selected from the group including:

- 10 (a) said defensive players holding onto the game object for a set time before releasing;
- (b) said defensive players throwing the game object out of the playing area for the offensive team to retrieve; and
- (c) excluding an offensive player from the activity for a set time period.

15 42. The sporting activity of any one of claims 34 to 41 further including a plurality of bases provided at discrete locations within the playing area, each of said bases being assigned to a respective team.

20 43. The sporting activity of claim 42 wherein a penalty is imposed on the offensive players in response to said defensive players interfering with the movement of the game object to the selected remote unit, said penalty requiring the offensive players to return to the teams assigned base whereon the stimuli are deactivated for a set penalty time.

25 44. The sporting activity of any one of claims 34 to 43 whereby the offensive team is awarded a number of points for successfully moving said game object to the selected remote unit.

45. The sporting activity of claim 44 whereby a winning team is determined based on the number of points accumulated by said team.

30 46. The sporting activity of any one of claims 34 to 43 whereby a winning team is determined according to any one or more of the following:

- (a) the distance covered by each team in a given time;
- (b) the time taken for each team to cover a set distance;

- (c) the time taken for each team to complete a number of gates; and/or
- (d) the number of gates completed within a given time.

47. The sporting activity of any one of claims 34 to 46 wherein the defensive
5 players and said offensive players intermittently interchange roles.

48. A method of undertaking physical activity for exercise or competitive
purposes, said method including the steps of:

10 providing a common activity area, said playing area being defined by a plurality of remote units;

assigning athletes to at least two teams, said teams each including a plurality of athletes wherein each of the plurality of athletes is assigned the role of either a defensive player or an offensive player;

providing a game object propelled by the offensive players of said team;

15 randomly generating a stimuli identifying a team at selected remote units to which the offensive players of the identified team must move the game object, and wherein said defensive players react to the movements of said offensive players in order to prevent said game object reaching the selected remote unit.

20 49. The method of undertaking physical activity for exercise or competitive purposes of claim 48 wherein the step of randomly generating said stimuli is conducted over one or more periods of a predetermined length.

25 50. The method of method of undertaking physical activity for exercise or competitive purposes of claim 49 wherein the length of said one or more periods is a predefined time.

30 51. The method of method of undertaking physical activity for exercise or competitive purposes of claim 49 wherein the length of said one or more periods is based on a set number of completions required to be performed by said offensive players.

52. The method of method of undertaking physical activity for exercise or competitive purposes of any one of claims 49 to 51 further including the step of intermittently interchange the roles of said defensive and offensive players over the one or more periods

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53. The method of method of undertaking physical activity for exercise or competitive purposes of any one of claims 48 to 52 further including the step of selecting said physical activity from the group including full-contact, partial-contact and non-contact.

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54. The method of method of undertaking physical activity for exercise or competitive purposes of any one of claims 48 to 53 further including the step of imposing a penalty on said offensive team in response to said defensive players interfering with the transfer of said game object.

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55. The method of method of undertaking physical activity for exercise or competitive purposes of claim 54 wherein said penalty is selected from the group including:

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- (a) said defensive players holding onto the game object for a set time before releasing;
- (b) said defensive players throwing the game object out of the playing area for the offensive team to retrieve;
- (c) excluding an offensive player from the activity for a set time period; and
- 25 (d) requiring the offensive players to return the game object to a discrete location within the playing assigned to said offensive team for a given time period.

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56. The method of method of undertaking physical activity for exercise or competitive purposes of any one of claims 48 to 55 further including the step of awarding a number of points to said offensive team for successfully moving said game object to the selected remote unit.

57. The method of method of undertaking physical activity for exercise or competitive purposes of claim 56 further including the step of determining a winning team based the number of points accumulated by said team.

5 58. The method of method of undertaking physical activity for exercise or competitive purposes of any one of claims 48 to 55 further including the step of determining a according to one or more of the following:

10 (a) the distance covered by each team in a given time;
(b) the time taken for each team to cover a set distance;
(c) the time taken for each team to complete a number of gates; and/or
(d) the number of gates completed within a given time.